

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (ORIGINAL): A method of monitoring one or more substances of interest comprising:
applying a plurality of out-of-plane microneedles to a surface of an internal region, said
microneedles long enough to sample one or more substances of interest at and/or just
below said surface;
said microneedles comprising one or more membranes on a side opposite a side applied to
said surface such that said membrane is not placed under said surface;
said membrane separating in said microneedles from a dialysis material;
such that dialysis occurs outside of said internal region.
2. (ORIGINAL): A method of monitoring one or more substances of interest comprising:
applying a plurality of microneedles to a surface of an internal region while keeping one
or more dialysis membranes and a dialysis fluid outside of said region thereby
performing dialysis outside of said region.
3. (ORIGINAL): The method of claim 2 or 1 further wherein:
said one or more dialysis membranes comprise a large total membrane surface that can
remain outside of said internal region.
4. (ORIGINAL): The method of claim 2 or 1 further wherein:
said surface is the skin of a mammal.
5. (ORIGINAL): The method of claim 2 or 1 further wherein:
said surface is the outer skin of a plant or part of a plant.
6. (ORIGINAL): The method of claim 2 or 1 further wherein:
said surface is a surface of a living organism or part or organ thereof.
7. (ORIGINAL): The method of claim 2 or 1 further wherein:
a plurality of said microneedles are pre-filled with a fluid before said applying.

8. (CURRENTLY AMENDED): A method of treating glucose disorders comprising:
applying a plurality of out-of-plane microneedles to the skin of a subject with a dialysis membrane remaining outside the skin; and
performing thereby allowing for continuous glucose monitoring by testing composition of a dialysis fluid remaining outside the skin and separated from said microneedles by said dialysis membrane.
9. (ORIGINAL): The method of claim 8 further comprising:
fixing a detecting substance useful in determining glucose levels on an opposite side of said dialysis membrane from said needles;
wherein said fixing is accomplished by placing a polymer-detecting substance solution at an opposite side of said membrane after higher temperature fabrication and/or assembly steps of said microneedles have been performed.
10. (ORIGINAL): A device for monitoring a substance of interest comprising:
a group of out-of-plane microneedles;
a dialysis membrane proximal to a non-insertive side of said group;
a dialysis fluid in contact with a second surface of said dialysis membrane opposite said group ;
such that when said group is pressed against a surface of interest, said substance of interest within and/or behind said surface of interest can come in contact with a second surface of said dialysis membrane, allowing one or more substances of interest to pass into said dialysis fluid.
11. (ORIGINAL): The device according to claim 10 further comprising:
one or more sensors in contact with said dialysis fluid for measuring and/or detecting one or more substances of interest.
12. (ORIGINAL): The device according to claim 11 further comprising:
an area for holding calibration fluid; and
a valve between said calibration fluid and said dialysis fluid.

13. (ORIGINAL): The device according to claim 10 further comprising:
at least 8 microneedles in said group.
14. (ORIGINAL): The device according to claim 10 further comprising:
at least 50 microneedles in said group.
15. (ORIGINAL): The device according to claim 10 further comprising:
at least 200 microneedles in said group.
16. (ORIGINAL): The device according to claim 10 further comprising:
at least 750 microneedles in said group.
17. (ORIGINAL): The device according to claim 10 further wherein:
said dialysis membrane comprises one or more membranes, each membrane providing
separation for a plurality of said microneedles.
18. (ORIGINAL): The device according to claim 10 further wherein:
said dialysis membrane comprises a plurality of membranes, at least some of said plurality
of membranes providing separation for just one of said microneedles.
19. CANCELLED
20. (ORIGINAL): The device according to claim 10 further wherein:
said microneedles are between about 100 micrometers and about 300 micrometers long.
21. (ORIGINAL): The device according to claim 10 further wherein:
said microneedles are between about 180 micrometers and about 220 micrometers long.
22. (ORIGINAL): The device according to claim 10 further wherein:
said microneedles are constructed of a metallic material.
23. (ORIGINAL): The device according to claim 10 further wherein:
said microneedles are constructed of plastic.
24. (ORIGINAL): The device according to claim 10 further wherein:

said microneedles are constructed of silicon.

25. (ORIGINAL): The device according to claim 10 further wherein:

said microneedles are constructed of a semiconductor material.

26. (ORIGINAL): The device according to claim 10 further wherein:

said membrane comprise a polymer and/or gel and/or porous poly-Si.

27. (ORIGINAL): The device according to claim 10 further comprising:

one or more enzymes integrated into said membrane.

28. (CURRENTLY AMENDED): The device according to claim 10 further wherein:

a diffusion barrier and a check valve ~~that~~ are used together as a two-way valve.

29-37. WITHDRAWN

38. (CURRENTLY AMENDED): A method of monitoring one or more substances of interest comprising:

applying a plurality of out-of-plane microneedles to a surface of an internal region, said

microneedles long enough to prestress a region of the surface at a needle lumen;

applying high pressure to a small local surface region through said microneedles to cause

rupture of the cell matrix to open a connection between fluids inside ~~the~~ a needle lumen

and bodily fluids underneath the broken skin layer; and

using said connection to sample one or more substances of interest at and/or just below said surface.

39. CANCELLED